

CLAIMS

1. A method for producing hydrogen by Pressure Swing Adsorption in a PSA unit of a feedstock gas at a first pressure ( $P_1$ ) containing hydrogen, with compressed waste being sent to a fuel gas mixture distribution network at a second pressure ( $P_2$ ), lower than the pressure ( $P_1$ ), and containing hydrogen, involving the step of tapping off a fraction of the fuel gas mixture flowing through the network, of compressing it more or less to the first pressure ( $P_1$ ) and of injecting it by way of additional feedstock gas into the PSA unit.
- 15 2. The method as claimed in claim 1, characterized in that it involves the step of injecting the fraction of fuel gas mixture into the feedstock gas.
- 20 3. The method as claimed in claims 1 and 2, characterized in that the first pressure ( $P_1$ ) ranges between about 15 and 45 bar and the second pressure ( $P_2$ ) ranges between about 3 and 8 bar.
- 25 4. The method as claimed in one of the preceding claims, characterized in that the waste is extracted from the pressure swing adsorption unit at a third pressure ( $P_3$ ) ranging between about 1.1 and 2 bar.
- 30 5. The method as claimed in one of the preceding claims, characterized in that the fuel gas mixture contains at least 30% hydrogen.
- 35 6. The method as claimed in claim 5, characterized in that the fuel gas mixture contains between about 35 and 50% hydrogen.

7. An installation for implementing the method as claimed in one of the preceding claims, comprising:
  - at least one feedstock gas supply pipe (3);
  - at least one line (10) of a fuel gas mixture distribution network;
  - at least one PSA unit (1) for separating gases by adsorption having one inlet (2) connected to the feedstock gas pipe (3), a production gas outlet (4) and at least one waste gas outlet (7);
  - a first compressor (9) connecting the waste gas outlet (7) to the line (10); and
  - a second compressor (13) connecting the line (10) to the inlet (2) of the PSA unit.
- 15 8. The installation as claimed in claim 7, characterized in that the second compressor (13) is placed in a pipe (12) connecting the line (10) to the feedstock gas pipe (3).
- 20 9. The installation as claimed in claim 7 or 8, characterized in that the second compressor (13) is connected to the line (10) upstream of the latter's connection to the first compressor (9).
- 25 10. The installation as claimed in one of claims 7 to 9, characterized in that the first (9) and second (13) compressors use common subassemblies.
- 30 11. The installation as claimed in claim 10, characterized in that the first (9) and second (13) compressors have a common driveline (14).